United Nations E/CN.17/IFF/1999/9

# Economic and Social Council

Distr.: General
18 February 1999

Original: English

**Commission on Sustainable Development**
**Intergovernmental Forum on Forests**
**Third session**
Geneva, 3–14 May 1999

## Programme element II.d (viii)

## Matters left pending and other issues arising from programme elements of the Intergovernmental Panel on Forests process

## Issues that need further clarification: assessment, monitoring and rehabilitation of forest cover in environmentally critical areas

**Report of the Secretary-General**

*Summary*

Environmentally fragile ecosystems are understood in the present report as those in which natural processes and human interventions combine with the physical characteristics of the environment to make them susceptible to unfavourable changes, degradation or complete destruction. They include sub-humid, arid and semi-arid areas in tropical and temperate regions, mountain ecosystems, wetlands, coastal systems and small islands.

Issues concerning the assessment, management and restoration of forest, other wooded land and tree resources are examined and a number of trends stressed, including (a) the existence of mechanisms for assessment of all types of forests at global level in the context of the Food and Agriculture Organization of the United Nations survey of the world's forests and other wooded lands; (b) the increasing importance given to single trees in relation to the needs of populations in environmentally critical areas for livelihood improvement and various environmental services, essential under the harsh conditions prevailing in such areas; and (c) the momentum built around mountain ecosystems and the management of their resources for the well-being of upland as well as related lowland communities.

99-04552 (E) 160399

A brief review of ongoing initiatives has resulted in the identification of promising approaches in the management of environmentally critical areas, especially in the management of dryland and mountain forests. In general, it is concluded that the available solutions are more policy related than technical, and that cooperation and the establishment of lasting partnerships are essential to make progress in the management, development, conservation and/or rehabilitation of forests in environmentally critical areas.

The report recommends strengthening a number of selected key partnerships in regions and subregions to translate the global level process into action at the regional, subregional and national levels.

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# I. Introduction

1. The importance of the management, conservation and sustainable development of forests[1] and forest land in environmentally critical areas was recognized from the beginning of the United Nations Conference on Environment and Development (UNCED) process. The outcome of UNCED places environmentally critical areas at the centre of international attention in relation to combating deforestation and the conservation of forest and tree resources where they are ecologically most needed for critical environmental and social services.

2. At its first session, the International Panel on Forests (IPF) confirmed this importance by identifying the need to address special factors and issues concerning fragile ecosystems affected by desertification and drought and examining the needs of countries with low forest cover, which include mostly environmentally critical ecosystems. The outcome of IPF deliberations included a number of proposals for action to address issues and problems of environmentally critical areas.

3. At its first session, IFF defined programme element II.d (viii) as follows:

> "*Consider other issues arising from the programme elements of the IPF process needing further clarification ... inter alia ...* assessment, monitoring and rehabilitation of forest cover in environmentally critical areas ..." (see E/CN.17/IFF/1997/4, para. 7, category II (d)).

4. At its second session IFF noted that:

(a) Forests play an important role in combating desertification and land degradation. Forest plantations are of particular value as a means of restoration in areas where the original forests have disappeared and in reclaiming degraded land;

(b) Rehabilitation through tree plantations, where appropriate, should have clear objectives and involve relevant interested parties, in particular local communities and indigenous people, with due consideration to role of women and to local knowledge;

(c) Special attention is required to meeting the needs of developing countries with low forest cover;

(d) Mountain areas, including watersheds, coastal areas and mangroves, as well as small islands, deserve special attention.

5. IFF requested that the IFF secretariat, in preparation for its third session:

(a) Prepare a document, in consultation with the United Nations Convention on Combating Desertification secretariat, that will enable IFF to consider options for action based on practical, innovative, real-life experiences with land rehabilitation in countries covering a wide range of environmental, social and economic conditions;

(b) Include in their analysis mountain areas, as well as mangrove forests and coastal zones.

6. The present report, prepared by the IFF secretariat, is based on inputs received from FAO in collaboration with member organizations of the informal, high level Inter-Agency Task Force on Forests, as well as the secretariat of the Convention to Combat Desertification.

# II. General overview of the conclusions and proposals for action of the Intergovernmental Panel on Forests

7. The issues relevant to programme element II.d (viii) are related to IPF programme elements concerned with (a) fragile ecosystems affected by desertification and drought; (b) needs and requirements of developing and other countries with low forest cover; (c) several cross-cutting programme elements, including traditional forest-related knowledge, scientific research, the development of criteria and indicators for sustainable forest management, and methodologies for the assessment and proper valuation of the multiple benefits of all types of forests. The institutional and policy aspects are considered relevant to all environments, but the specificity of critical environments needs to be given further consideration by IFF.

## A. Proposals for action of the Intergovernmental Panel on Forests concerning ecosystems affected by drought and desertification

8. Only ecosystems affected by drought and desertification were addressed by IPF. The premises on which those proposals were formulated included the following: (a) the critical impact of land degradation and desertification in arid, semi-arid and dry sub-humid areas and the potential and effective role played by forest conservation; (b) the understanding that afforestation and reforestation could play an important role, if integrated with overall sustainable management of natural resources and incorporated in broader planning and programming; (c) such

issues as poverty, food security, population, domestic energy supply and land-use patterns should be addressed if forest-related development components are to be meaningful and successful; and (d) coordinated implementation of relevant Agenda 21 chapters and conventions, in particular the Convention to Combat Desertification, is essential.

9. The IPF proposals for action concerning ecosystems affected by drought and desertification included:

(a) National and international action by developing and implementing national forest/dryland programmes and policies; analysis of past experiences and monitoring trends; conservation, through the establishment of protected areas to safeguard ecosystems, their water supply functions, and historical and traditional uses;

(b) Support to education, training, extension systems and participatory research, involving indigenous and local communities;

(c) Strengthening and further developing partnerships and collaboration between local communities, governmental and non-governmental organizations; developing efficient and coordinated programmes of international cooperation and action within the CCD;

(d) Research on appropriate plant species for use in land restoration and rehabilitation of existing vegetation.

## B. Incorporating other environmentally critical ecosystems in the Intergovernmental Forum on Forests process

10. The main challenges and constraints noted for forest ecosystems affected by drought and desertification are similar to those encountered in other environmentally critical ecosystems which IFF decided to include for consideration at its second session. They include the following:

(a) Climatic conditions are often harsh and stressful to ecosystems and people due to droughts, floods, hurricanes etc.;

(b) Human conditions in affected regions are severe, including poverty and insufficient communication with other regions, imposing important constraints to development;

(c) Changing land-use patterns and lack of stability increase threats to the existence of trees and forests;

(d) Overexploitation for food, fuel and fodder is rampant, and at times is exacerbated by human induced catastrophic events, such as forest and woodland fires;

(e) Inadequate knowledge of ecosystems and their resources, and weak institutional capacity are common features, only slightly offset by growing involvement of various players in the use of the resources;

(f) Insufficient regional cooperation and networking in research and development slows down the process of sharing experience and technologies.

11. **Forests in mountain ecosystems** are essential to maintain processes that enhance water resources and regulate run-off, control erosion and land degradation and safeguard biological diversity. These functions are essential to the well-being of upland and related lowland communities. The assessment and monitoring of mountain forests are very important tasks if actual threats to the delicate balance in mountain ecosystems are to be predicted and staved off. The consideration of mountain forest ecosystems by the IFF process is timely, considering the increasing attention being given to sustainable mountain development and water-related issues in general; a number of recommendations for dry forest ecosystems could apply equally to mountain forests.

12. **Forests of coastal areas, mangrove forests, wetland forests and small island forests** are very productive ecosystems that play critical ecological and economic roles. Their contribution is essential to the conservation of these fragile ecosystems since they control erosion and modification of coastal areas and riverbanks; in shallow swamps and brackish water, they capture sediments and offer a rich habitat to fish species and crustaceans. They contribute to agricultural production since they sustain paddy cultivation. They constitute interesting landscapes and environments for the development of tourism. The biological diversity of these ecosystems is extremely rich and specialized. This area warrants close attention since any loss of ecosystems and species would be irreversible.

# III. Major issues of assessment and monitoring of forests in environmentally critical ecosystems

13. Forests, wooded lands and trees in environmentally critical areas have a number of key characteristics which complicate their proper assessment and monitoring. They are often scattered or situated in difficult topographical and geographic locations. Their contribution to national wealth, especially through the provision of environmental services, is not well documented, if not completely ignored. This situation calls for increased efforts to assess their extent,

vitality and functioning. Many of the products and benefits that they provide are used by consumers outside the local communities that are directly concerned with their conservation and management.

### A. Assessment and monitoring of forests, wooded lands and tree resources, and biological inventories of woody plant species and ecosystems in drylands

14. Forests in drylands belong to categories clearly defined in the Food and Agriculture Organization of the United Nations (FAO) forest resources assessment 2000 (FRA 2000). Open forests,[2] as defined, include most forest formations of sub-humid areas, while other wooded lands[3] would include tree, shrub and grass formations occurring in other areas experiencing drought and desertification in dry areas.

15. Forest resources assessment has traditionally been understood to focus on forests in humid tropical and temperate areas. However, it is expected that in FRA 2000, valuable information will also be available on forest resources of dry lands. This is further confirmed by the scope of FRA 2000, under which FRA 2000 will analyse and report forest state and change by ecological zone. The classification is based on climatic factors and altitude, which to a large extent determine distribution of forest formations. Ecological zones shall be reported for forest area as a whole or by natural forest and plantations, respectively. Hence, dryland forests are expected to be appropriately covered. However, considering the value of these forests to local populations, it will be difficult to adequately identify quality changes, especially change in species composition and biological diversity, which is mostly induced by the common practice of selective cutting of highly valuable trees.

16. **The assessment of silvopastoral systems** has benefited from biological assessments of dry forest formations carried out between the mid-1970s and the mid-1980s.

17. **The assessment of single tree resources** is not currently carried out, and most national inventories do not include single trees. This situation should improve, however, with more interest being devoted to the concept of trees outside forests and to non-timber forest products originating from woodlands.

### B. Assessment and monitoring of mountain forests

18. The different trends concerning change in forest cover in developed and developing countries also apply to mountain forests. While deforestation of mountain forests in developed countries has largely been halted and in some cases reversed, deforestation continues, at an alarming rate, in developing countries for industrial development and for the needs of local communities for employment, food, shelter, fodder and income.

19. It is expected that mountain forests will, in principle, be adequately covered by FRA 2000. However, more detailed information will be needed in the future, especially relating to the impact of local uses, assessment of mountain forest biological diversity and assessment of forest vitality.

### C. Assessment and monitoring of mangroves and coastal tree and forest resources

20. In 1994,[4] mangrove formations covered approximately 16.53 million hectares (ha), including 7.44 million ha in Asia and the Pacific, 3.26 million ha in Africa and 5.8 million ha in Latin America and the Caribbean. Their assessment is not a focus of FRA 2000. However, one of the case studies in FRA 90 focused on West Africa, and did specifically assess changes occurring in mangrove forests. In FRA 2000, mangrove forests will be included in closed forests (typical examples of tropical closed forest formations include tropical rainforest and mangrove forest).

## IV. Other issues concerning economic, social and environmental services of forest and tree resources in environmentally critical forest ecosystems and their rehabilitation

### A. Trees and forests in ecosystems affected by drought and desertification

21. The issues concerning management, conservation and rehabilitation of tree and forest resources in ecosystems affected by drought and desertification are well documented. Several international expert meetings have focused attention on arid and semi-arid zones, including an expert meeting on rehabilitation of degraded forest ecosystems (Lisbon, June 1996), an expert consultation on the role of forestry in

combating desertification (Antalya, Turkey, October 1997) and the many meetings organised in the framework of the implementation of the United Nations Convention to Combat Desertification in the various regions and subregions.

22. The **integration of forest and tree resources in national planning** has been a recommendation reiterated at all meetings dealing with the subject. National efforts to organize land-use with due account of forest and tree resources in dry lands will be further developed as regional planning of dry areas is considered systematically in the implementation of the Convention to Combat Desertification. The Lisbon meeting made a very strong recommendation on this subject, reiterated by the Antalya consultation.

23. During the last two years, the issue of **tree resources** has gained prominence and this augurs well for more adequate consideration of such resources, independently of any purely forest-related approach. Trees outside forests are essential for maintaining and/or rehabilitating fertility of agricultural systems, especially those with limited technological inputs. Their contribution to the local economy is essential. Farmers and pastoralists often contribute to the conservation of biological diversity by incorporating local tree species in production systems outside forests.

24. **Silvopastoral systems and promotion of trees for fuel food and fodder** are needed to address threats to the sustainable use and conservation of pasture lands in arid areas, especially where the major land-use option is grazing. The tendency is to overutilize rangelands as the human population as well as the number of livestock animals continue to grow. Silvopastoral models are well known as a result of studies carried out since the early 1950s with support from the United Nations Educational, Scientific and Cultural Organization (UNESCO), FAO, the United Nations Environment Programme (UNEP), and the United Nations Development Programme/Office to Combat Desertification and Drought (UNDP/UNSO). The current challenge is to find new ways of sustainably using silvopastoral systems notwithstanding the new factors compounding land degradation, in particular in the Sahelian and North African countries.

25. The **conservation of forests and trees in dry lands** is mostly included in protected areas, including national parks, biosphere reserves and other conservation units. Intermediate models of limited or partial protection are rare, but the multipurpose nature of the services provided by forests and trees calls for development of land-use and utilization models that would help both conservation and development. It is essential to reconcile conservation of forests and trees with meeting the needs of local communities in these areas. There is a need to further document and build upon the experiences gained in Africa, promoting profitable natural resources husbandry by local communities (e.g., the Campfire programme in Zimbabwe and the Nazinon ranch initiative in Burkina Faso).

## B. Mountain forests

26. Mountains have recently emerged high on the international agenda; there have been dramatic new developments during 1998. The emerging issue of scarcity of fresh water resources has focused attention on the central role of mountains, in particular mountain forests, in sustaining water supply. The General Assembly has proclaimed 2002 as the International Year of Mountains. This development is the result of the intense exchange of information and cooperation at all levels concerning mountain ecosystems. Preparatory activities for the Year will provide the basis for further developments regarding mountain forests.

27. In Europe, initiatives on mountain forests will be encompassed in (a) efforts to implement resolution S4 of the Ministerial Conference on the Protection of Forests in Europe and the creation of the European Observatory on Mountain Forests, which will further mobilize local communities; (b) the work of the European Forestry Commission Working Party on the Management of Mountain Watersheds, which in the process of redefining its mandate will be focusing more on topics other than torrent control.

28. In other regions, the focus will be on watershed management and agroforestry practices, and the importance of single trees in highlands and their potential to retain and improve land fertility, as promoted by the International Centre for Research in Agroforestry (ICRAF) in its African Highlands Initiative activities and by FAO through the Interregional Project for Participatory Upland Conservation and Development in Burundi and Tunisia, as well as in Nepal, Pakistan and Bolivia.

## C. Coastal areas, mangrove and small island areas

29. The International Year of the Oceans, which was observed in 1998 under the leadership of UNESCO, has substantially increased attention on and awareness of the importance of ocean and sea-related resources and systems. The need for urgent and sustained action for the conservation

and sustainable development of these ecosystems has been stressed, especially during the regional consultations.

30. **Coastal areas** may include various forest formations, depending on whether they are flat, sandy or in mountainous areas. These formations are usually rich in biological diversity and present many developmental options. Coastal areas are often favourable locations for urban development, industry and tourism, often with drastic consequences for their natural forest formations. In mountainous coastal areas, it is important to undertake watershed management to avoid forest degradation, soil erosion and the pollution of coastal waters, and to enhance water discharge to meet the needs of lowland coastal communities.

31. **Mangrove forests and other swamp areas** are common and characteristic features of tropical coastal areas. They are constituted by a limited number of plant species which live under special conditions of shallow brackish water, needing regular inflow of freshwater; they capture the sandy and loamy products resulting from the erosion of neighbouring land. These conditions make them an area of complex biological processes, providing the breeding ground of many fish and crustacean species. Plant and animal resources of mangroves make them highly valuable economic assets. They are areas that support fisheries, tourism, timber production and agriculture. However, these economic activities, including paddy cultivation, often lead to degradation of the mangrove if not severe deforestation. Mangrove ecosystems are often the object of contradictory or competing land uses. For example:

(a) Conservation of mangrove ecosystems may offer excellent opportunities for the preservation of complex ecological systems on an exceptionally varied climatic gradient from dry to humid tropical zones, including in parallel with tourism development;

(b) Communities along the coasts have developed patterns of intensive use of mangrove forests on which they entirely depend for food and shelter. However, their conversion to shrimp farms, especially in South-East Asia and in Central and South America, represents a major threat to mangrove forests;

(c) The development of rice cultivation has claimed thousands of hectares of mangrove forests in the past, and continues to do so. However, in many cases these agricultural development ventures have not prospered, and they may even have triggered soil degradation processes towards acidification and salinization;

(d) The harvesting of mangrove timber beyond the traditional needs of local populations poses additional serious threats to mangrove forests.

32. Improvements in the management, conservation, rehabilitation and development of mangrove lands should include:

(a) Better integration in national and local land-use plans and identification of critical areas;

(b) Assessment of mangrove forest cover and related needs of conservation of all types of mangroves throughout the world;

(c) Development of less aggressive methods of mangrove land cultivation or development;

(d) Further development and sharing of knowledge and techniques on mangrove management, silviculture and plantation/reforestation, through proper dissemination of the substantial knowledge that has been accumulated, particularly in Asia;

(e) Promotion of and support to technical cooperation initiated among developing countries, especially between Asia and Africa, for sound transfer of technologies and exchange of experiences.

33. Forests remain relatively important in **small island areas**. Worldwide, forests cover 34.5 per cent of land area in small islands; however, the extent of this forest cover is decreasing very rapidly. Overall annual rate of change is 0.8 per cent per year: 2.8 per cent in Africa, 2 per cent in North and Central America and 0.4 per cent in Oceania.

34. The major issues concerning forest and tree resources in small islands include:

(a) Threats to the rich original biological diversity, unique and endemic characteristics of plant formations of island forest ecosystems;

(b) Differentiation due to altitudinal factors often provide a number of options for conservation and development of small island forests. All issues regarding mountain forests are also pertinent to forests of small islands, in particular their role in watershed conservation and regulation of water resources;

(c) Intense use of forest/tree resources. Consequently, there is increased land degradation on steep slopes, shallow coarse soils or volcanic deposits, while rehabilitation work is costly and labour scarce; dry tropical islands present particular challenges and difficulties;

(d) Scant groundwater resources; long dry spells may make afforestation very difficult.

35. In previous rehabilitation/afforestation work, sufficient attention may not have been given to species selection and

introduction, and in many cases invasive species have considerably modified the natural ecosystem.

36. Enhanced attention on forest issues in small islands needs to consider:

(a) Careful planning and preparation to take into account the delicate characteristic of small islands;

(b) Careful "mapping" of types of interventions and relevant species, as well as identification of the economic and social sustainability of the models to be used;

(c) Use of local species or stands that have evolved good adaptation to the ecology of small islands and may present comparatively advantageous features;

(d) Adapting forest management and silviculture to enhance preparedness and capability of response to hurricane and other natural disasters and hazards.

## V. Review of promising initiatives

37. The present section reviews a number of selected initiatives or programmes to illustrate promising directions in support of the IPF proposals for action.

### A. Fragile ecosystems affected by desertification and droughts

38. Support to countries and regional institutions. Efforts towards the elaboration of national action programmes and regional action programmes to combat desertification and drought include:

(a) **National action programmes**. Progress is slow but significant in the commitment of countries and their partners to develop national action programmes to combat desertification. Many countries are engaged in the elaboration of their national action programmes. Those with advanced formulation of plans or already in the process of implementation include China, Cape Verde, Senegal, Mali, Burkina Faso, Niger and Chile;

(b) **Regional networks to support regional action programmes**. The United Nations Convention to Combat Desertification secretariat, with the full cooperation of most of the interested United Nations and Consultative Group on International Agricultural Research institutions, especially their regional representations, has held a number of organizational workshops to define the mandate and programme of selected regional networks and to launch these networks;

(c) **Integrated village land resources management at transboundary areas in the Sahel and North Africa**. The idea of this programme in Africa is to develop common initiatives on the conservation and coordinated use of natural resources, especially water and range resources, in areas straddling the frontier among countries of the Sahel. Current projects being developed involve Algeria, Tunisia, the Niger, Senegal, Mauritania and Burkina Faso.

39. Examples of enhancement of dry forest conservation and management in selected countries includes:

(a) **Concerted efforts towards management of natural forests in dry areas**. These efforts are continuing. After the above-mentioned Lisbon expert meeting and Antalya consultation, an important regional meeting on the management of natural forests in dry areas was held at Ouagadougou, Burkina Faso. Further efforts will continue on the review of the state of the art in other regions than Africa, and on encouraging more initiatives at national and local levels on effective restoration and management of dry forest, particularly in Latin America and Asia;

(b) **Management of the Miombo woodlands**. Efforts initiated in 1994 to secure better knowledge, more adapted institutional support and practice of low-impact exploitation of the Miombo woodlands will be pursued by a Centre for International Forestry Research (CIFOR) and European Union project for the management of the Miombo woodlands in Malawi, Mozambique, Tanzania, Zambia and Zimbabwe;

(c) **Series of workshops on criteria and indications on sustainable management of dry forests**. At least in Africa, a number of organizations have been helping countries on the issues of criteria and indicators for sustainable forest management in dry zones. UNEP and FAO have sponsored a dry-zone Africa process within two meetings in 1995 and 1997 to define criteria and indicators suitable for the special conditions of the ecological and socio-economic conditions of the region. A similar exercise was done for the Near East;

(d) **Heightened attention for and initiatives on trees outside forests**. The heightened interest in this area shown by many countries and organizations is welcome, and will help advance progress in the sector. In 1998 and 1999, a series of workshops are being organized to contribute to the implementation of the above objectives.

40. Efforts to strengthen national institutions for the development of national and regional capacities in research, education and extension include:

(a) **Development, transfer and implementation of knowledge and technology** relevant to rehabilitation of forest cover in environmentally critical areas;

(b) Efforts being developed by FAO, the International Plant Genetic Research Institute and other partners to support research and development institutions to **assess, conserve and sustainably use the forest genetic resources in dryland Africa**, especially in the Sudano-Sahelian zone;

(c) The establishment of a regional research-oriented programme for forest genetic resources in sub-Saharan Africa;

(d) A set of recent studies focusing on sandy soils and the use of plant based techniques for their rehabilitation, including sand dune fixation, introduction of appropriate irrigation methods and use of windbreaks;

(e) The Committee on Science and Technology of the United Nations Convention to Combat Desertification, which has become operational and is expected to provide needed information and advice on technologies and options towards the management, conservation and development of natural resources in dry lands and desertification-prone areas.

41. Development of **international partnerships on selected issues**, as called for by IPF, has, among other things, lead to the relaunching by UNEP of the Ecosystem Conservation Group. The Group will continue to focus on fragile ecosystems. It should be noted that the second meeting of the Group, held at Gland, Switzerland, on 16 November 1998, included arid and semi-arid ecosystems among themes to be considered in the future. Any discussion on this subject should be carefully coordinated with the current work of the Convention to Combat Desertification secretariat.

## B. Mountain ecosystems

42. The initiatives concerning mountain forests have mostly been taken in the larger framework of the implementation of chapter 13 of Agenda 21 (Managing fragile ecosystems: sustainable mountain development). Some of these initiatives include:

(a) Renewed and heightened interest in mountain forests in Europe in the framework of the Ministerial Conference on the Protection of Forests in Europe. The Conference has requested strengthening the implementation of its resolution S4 by the newly created European Observatory of Mountain Forests, in collaboration with FAO and the International Union of Forest-Related Organizations. The European Forestry Commission Working Party on Mountain Watersheds, as well as the European Forestry Commission itself, have committed themselves to increased attention to mountain watersheds and their forests;

(b) In Asia , the International Centre for Integrated Mountain Development (ICIMOD) has launched its next six-year programme, in which the management of natural resources calls among other things for (a) a comprehensive overview of the forest resources in the Hindu-Kush-Himalaya region; (b) sustainable development and use of mountain forest resources and restoration of balanced nutrient return to forests; (c) promoting policies, programmes and institutional mechanisms enabling poor households to have greater access to and benefits from forest resources; and (d) policies and programmes for a better use of indigenous knowledge, cultural practices and conflict management.

## C. Coastal forests, mangroves and small islands

43. FAO has synthesized a large amount of available information on mangrove management, and published a technical paper on mangrove forest management guidelines in 1997 providing information on the ecological basis for sustainable management of mangroves, the multiple use potential of mangrove forests, assessment techniques and approaches to effective management. UNESCO and UNEP support initiatives in West Africa and Asia, and the mangrove project completed by UNESCO in 1990 has accumulated information on the ecological and biological knowledge of mangroves as well as practical use of the resources.

# VI. Preliminary conclusions and proposals for action

44. The management, conservation and sustainable development of forests, other wooded land and trees in environmentally critical areas needs to be integrated within land-use plans and national forest programmes that are developed within the context of national sustainable development strategies. There is an urgent need to enhance international cooperation and strengthen support towards capacity-building in priority areas.

## A. Stocktaking and directions for the near future

45. It has been shown that although there has not yet been a sufficiently concerted implementation of the IPF proposals for action, there have been a number of coherent initiatives which have helped advance the agenda of environmentally fragile ecosystems. Efforts promoting the implementation of the United Nations Convention to Combat Desertification and chapter 13 of Agenda 21 have facilitated these initiatives. Meaningful partnerships have been established not only among international agencies but also with the local private sector and civil society.

46. It should be noted, however, that the enthusiasm towards the outcome of the Convention to Combat Desertification negotiations has not been translated into early implementation in a number of countries. The Convention could be a catalyst for decisive steps towards the resolution of many problems of unsustainable land-use practices and resource use, triggering degradation processes. In the wake of the second meeting of the Conference of the Parties to the Convention (Dakar, December 1998), an increased rate is anticipated in the process towards implementation, in particular in local and national programme formulation.

47. The Forum may wish to consider:

(a) Securing more cooperation and coordination of activities concerning environmentally critical zones, and more systematic collection of information on initiatives and activities;

(b) Better division of labour among various players, and attempts to better distribute responsibilities and avoid overlapping;

(c) Catalysing concrete activities through further documentation and dissemination of information on technologies and best practices;

(d) Promoting information on approaches and procedures for practical use of existing financial mechanisms to effectively support action;

(e) Promoting networking, information and mobilization of all civil partners;

(f) Stronger support to international programmes and conventions regarding fragile ecosystems, in particular the Convention to Combat Desertification and Agenda 21 chapters 12 and 13, which address the concerns of the poorer communities.

## B. Specific critical ecosystems

48. Concerning **dry forest ecosystems and trees outside forests**, the Forum may wish to consider:

(a) Consolidating partnerships and operationalizing inter-agency cooperation (e.g. Convention to Combat Desertification secretariat, FAO, International Fund for Agricultural Development (IFAD)). It would be efficient if partnerships established at the national level would complement regional and global alliances. Expanding activities at field and normative levels among traditional partners, such as FAO, UNEP, IFAD, UNSO, UNDP and the World Food Programme, would significantly help in advancing the Convention to Combat Desertification agenda along with bilateral cooperation;

(b) Recognizing and supporting technical, policy and socio-economic dimensions of issues of high human and ecological significance and promoting practical initiatives to address these issues.

49. More specifically, the Forum may wish to consider:

(a) Improving and supporting biological and quantitative assessments of dryland forest resources, taking due account of the special needs in approach and methodologies of dry forests in the FRA world survey of forests, and future studies of factors of forest cover change in dry areas;

(b) Identification and assessment of tree resources and tree systems outside forests in critical areas. Reinforcing and supporting partnerships and initiatives on these should be encouraged; this major exercise would also include work on traditional knowledge and technologies for and products from these systems;

(c) Facilitate practical/operational initiatives for the application, observation and assessment of criteria and indicators of sustainable management of dry forests through selected field-based activities in major ecological dry zones. Practical measures should be encouraged to this effect through specific efforts to formulate and fund projects on forest management and application of criteria and indicators of sustainable forest management, thus moving from theory, formulating principles, and awareness-raising to real-life practice;

(d) Promoting technology assessment and transfer by supporting networking, including the Asia-Pacific Association of Forestry Research Institutions, Forestry Research Networking in Sudano-Sahelian Africa, the Latin American Agroforestry Network and the Silva Mediterranea Network on Multipurpose Species to Combat

Desertification. This would also include facilitating the work of the Committee on Science and Technology of the Convention to Combat Desertification and encouraging its cooperation with the above-mentioned bodies.

50. Concerning **mountain forests**, the Forum may wish to consider encouraging and supporting the partnerships already established or in the process of being established in various regions within the framework of chapter 13 of Agenda 21, which have generated a critical momentum, including:

(a) **In Asia**, a potentially strong ICIMOD-FAO-CIFOR partnership and the regional node of the Mountain Forum could develop effective regional operations and activities and generate interest and projects at national level;

(b) **In Africa**, IFAD, ICRAF, FAO, the International Institute for Land Reclamation and Improvement, UNDP, UNEP and the World Bank could encourage or rekindle initiatives in selected subregions where mountain issues are important. Areas of urgent attention would be the mountains and highlands of West Africa (Fouta Djalon, Nimba), the Central African mountains (Cameroon), the highlands of East Africa and southern Africa;

(c) **In Latin America**, networking in the region could be promoted and strengthened, with institutional support provided by the Mountain Association, the Consortium for the Sustainable Development of the Andean Region, FAO and the regional watershed network it supports in the region;

(d) **In Europe**, efforts should be organized around the partnership developed by the Ministerial Conference on the Protection of Forests in Europe and the work being organized around its resolution S4, the European Forestry Commission Working Party on the Management of Mountain Watersheds, and the European Observatory on Mountain Forests.

51. Concerning **coastal areas, mangroves and small islands**, the Forum may wish to consider:

(a) **For coastal areas in general**, encouraging countries to secure a better integration in overall and local land-use and development plans of concerned coastal areas, with special attention to the protection and sustainable management of their forests, particularly in the context of competing demands on coastal lands;

(b) **For mangrove ecosystems**, undertaking periodic assessment of mangrove cover and related conservation needs of all types of mangroves throughout the world, as well as the remaining mangroves of sub-humid and dry coastlines, encouraging countries to promote the development of less aggressive methods of mangrove land cultivation or development, and encouraging and promoting the further development and sharing of knowledge on mangrove management, silviculture and plantation/reforestation techniques through proper dissemination of the substantial knowledge that has been accumulated in Asia, especially in South-East Asia;

(c) **For small island areas**, careful planning and preparation, taking into account the delicate characteristics of small islands, which should precede any rehabilitation or restoration work. Countries should identify types of interventions and relevant species, and should assess the economic and social sustainability of the models being used with due account of the indications and initiatives of the local people, should encourage the use of the local species or selected introductions that have developed good adaptation to island conditions and may present comparatively advantageous features, and should adapt forest management and silviculture to heighten preparedness and capability of response to hurricane and other disaster hazards. The Forum may also wish to consider the outcome of the fourteenth session of the FAO Committee on Forestry concerning particular forestry issues and activities of interest to small island developing countries.

*Notes*

[1] In the present report, the term "forests" also includes, where appropriate, "other wooded lands", particularly in arid and semi-arid zones.

[2] Open forests are understood as formations with discontinuous tree layer but with a coverage of at least 10 per cent and less than 40 per cent; generally, there is a continuous grass layer allowing grazing and spreading of fires (examples are various forms of *cerrado*, and *chaco* in Latin America and wooded savannas and woodlands in Africa).

[3] Other wooded land includes land either with a crown cover (or equivalent stocking level) of 5 to 10 per cent of trees able to reach a height of 5 metres (m), at maturity *in situ*, or a crown cover (or equivalent stocking level) of more than 10 per cent of trees not able to reach a height of 5 m at maturity *in situ* (e.g., dwarf or stunted trees), or with shrub or bush cover of more than 10 per cent.

[4] See FAO/United States Forest Service mangrove forest management guidelines (1994).